

(19)



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Office européen des brevets



(11)

**EP 0 848 921 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention  
of the grant of the patent:  
**23.10.2002 Bulletin 2002/43**

(51) Int Cl.7: **A46B 15/00, A46B 13/00,  
A46B 3/10, B65C 9/36,  
G09F 3/16**

(21) Application number: **97830669.4**

(22) Date of filing: **12.12.1997**

(54) **Method for the manufacture of brushes and brush thus manufactured**

Bürste und Verfahren zu deren Herstellung

Brosse et procédé de fabrication

(84) Designated Contracting States:  
**BE DE ES FI FR GB GR IT**

(30) Priority: **19.12.1996 IT BO960672**

(43) Date of publication of application:  
**24.06.1998 Bulletin 1998/26**

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**EP 0 848 921 B1**

## Description

[0001] The present invention relates to a method for the manufacture of brushes and a brush thus manufactured.

[0002] In the production of brushes, in particular those destined to hobby use or in any case sold by retailers, said brushes are provided with an identification label bearing a series of data able to define the technical and safety features of the specific product.

[0003] Such data may pertain to the possible uses of the brush and to parameters for the operator's safety; the data may be expressed in alphanumeric form and also comprise bar codes, in addition to the manufacturer's and/or the retailer's trademarks.

[0004] In practice, the brush must bear data about, for instance, the manufacturer, brush model, the type of junction used its maximum number of rotations/minute, the safety norms to be followed, etcetera, and the bar codes may be used for inventory management or, for instance, to identify a retail price when the brushes are placed for sale. The label may be a paper or plastic film support so as to be associated to the brush by means of adhesive substances after the brush itself has been manufactured, or replaced by markings.

[0005] The markings may be performed by means of pads on the brush itself or with a mark obtained by stencilling with a template the data directly onto the metal body of the brush, or through laser marking.

[0006] Both these solutions present some drawbacks.

[0007] Adhesive labels may become detached from the brush to which they are applied, particularly during the operation of the brush which heats up considerably. Additionally, they may absorb dirt and be affected by processing residues, making the reported data unusable because they are illegible. Moreover, a supplementary attachment operation is required, raising the cost of the product.

[0008] The mechanical marking solution presents, as one of its drawbacks, the fact that, with the marking process, it is possible, by etching the surface of the metal sheet comprising the brush body, to define points which may present a predisposition to be attacked by rust or other corrosive agents.

[0009] Another drawback is due to the fact that, to perform the related operation, a generally expensive working process is required, since stamps previously obtained by electrical discharge machining must be set up.

[0010] Moreover, since the marking, for construction reasons linked to the thickness of the sheet metal, cannot exert more than a limited pressure on the brush body, the related reported data may turn out to be illegible once the components of the brush have been painted.

[0011] An additional negative characteristic is given by the essential impossibility of stencilling small brushes, with a brush body of relatively limited diameter.

[0012] The other types of marking, for instance laser,

present high installation costs and present, in part, the same disadvantages as mechanical marking.

[0013] Pad marking presents disadvantages due to data legibility and pad wear. All the aforesaid markings also present the following disadvantages:

- they require an additional operation on the brushes in addition to the ones strictly required for manufacturing;
- they present the impossibility of marking the bar code which requires particular colors to be read electronically;
- they present little operational flexibility when data on the brushes need to be modified.

[0014] Also known from document CH-A-0346860 is a brush comprising a holding loop for supporting a plurality of bristles, one inner cup and one outer cup between which is held the holding loop and a blocking element for fastening together the two cups.

[0015] Document EP-A-027675 shows an automated press for moulding grinding wheels and associating a label to the wheels.

**[0016] The constraint between a wheel and a label is defined by a substantially "T" shaped blocking element which is provided with an external peripheral extension in proximity of one of its ends. The label is placed between the wheel and the peripheral extension of the blocking element and is kept in contact with the wheel by means of the peripheral extension itself.**

[0017] Document US-A-3805457 relates to a method of attaching labels on rotary abrasive disks. This method comprises placing grindstone material and a label in a mould cavity. The grindstone material and the label are compressed together to obtain a single disk.

[0018] Furthermore, US-A-5522164 shows a device comprising a label for a rotary brush fastened to one edge of a threaded rod. The opposite end of the rod is secured into a threaded opening provided in the brush-body.

[0019] The purpose of the present invention is thus to eliminate the aforementioned drawbacks with a method for the realization of brushes, and the related brush, which allow optimally to support the data required to identify the brush and utilise it properly and to be able to use colours which enable to have a legible bar code.

[0020] The method consists of associating, during the assembly of the parts comprising the brush, and in an essentially irremovable manner, a tag on which are indelibly reported the data described above.

[0021] The invention relates to a method for the manufacture of brushes, according to claim 1, and the related brush according to claim 10.

[0022] The technical characteristics of the invention, according to the aforesaid purposes, can be clearly noted from the content of the claims reported below and its advantages shall be made clear in the detailed descrip-

tion which follows, made with reference to the accompanying drawings, which show an embodiment provided purely by way of non limiting example, in which:

- Figure 1 shows, in a schematic side view with sectioned parts, with a detail related to a tag shown in enlarged plan view and a detail, related to a rimmed junction, shown in section view, a possible embodiment of the method constituting the subject of the present invention, related to a cup brush;
- Figures 3, 4 and 2 show, in prospective schematic views, three embodiments of brushes according to the invention, pertaining respectively to a cup brush of small diameter, to a straight brush and to a small circular brush.

[0023] In the figures of the accompanying drawings, which constitute, as stated previously, a non limiting example of embodiment, a brush manufactured according to the invention is indicated as 1 and, in the remainder of the present description, both the method and the related brush shall be described.

[0024] In general, the method for the manufacture of brushes is of the type including an assembly phase during which a brush body (which may comprise one or more element) and a filament-holder loop (or a similar element for supporting fibres) are subjected to the action of pressing means, so as to constitute the actual brush, in which the brush body is mechanically constrained to the filament-holder loop.

[0025] The present invention comprises the irreversible association in said assembly phase of a tag 2 bearing a series of indelible data identifying the brush and/or the operating procedures for the brush itself

[0026] By way of example, such data may be the ones reported on the tag 2 shown in Figure 1. In particular, the indelible data appearing on the tag 2 pertain to: safety norms 21, maximum rpm number 22, country where the product was manufactured 23, manufacturer's trademark 24, type of item 26, junction diameter 27, bar code 28. For the bar code 28 it is possible to use the colours which can be read by means of electronic reading systems.

[0027] With reference to what is shown in Figure 1 the brush body may comprise at least an outer cup 3 and an inner cup 4, between which is placed the filament-holder loop 5.

[0028] The assembly operation is performed by placing on a support element 7 (shown only schematically in Figure 1), stacked one on top of the other, the outer cup 3, the filament-holder loop 5 and the inner cup 4. On the aforesaid parts acts a presser 8 (also shown only schematically in Figure 1) which moves to approach (towards F in the figure), so as to perform a rimming of a blocking element and so as to define the necessary mechanical constraint, which sets the brush in its definitive conformation.

[0029] The process may entail, similarly to what is shown in the Figures from 1 to 4 placing the tag 2, externally with respect to the outer cup 3, on the blocking element which, depending on the embodiments, may comprise differently shaped parts.

[0030] A possible example pertains to the manufacture of the cup brushes provided with a junction, as in the example shown in Figure 1; in this case, the blocking element comprises a junction 6, or a similar means for associating the brush with means to power it.

[0031] The junction 6 is rimmed inside the brush, in order to hold, thanks to the rimmed end 60 (see bottom right detail in Figure 1), the two cups 3, 4 and the filament-holder loop 5.

[0032] The association of the tag 2 to the brush 1 is accomplished by placing on the support element 7 the junction 6 and fitting on it, in succession from the bottom up, the tag 2 (which in this case will be annular shaped and resting on the inner plane surface 61), the outer cup 3, the filament-holder 5 and the inner cup 4. Pressure is then applied by the presser 8, which rims the end 60 of the junction 6 so as to accomplish the mechanical constraint, which keeps the brush together.

[0033] The tag 2, as previously stated, may be laminar with annular configuration, or its shape may be different but such as to be mechanically coupled to components of the brush.

[0034] Moreover, for its manufacture, aluminium may be used and the related supported data may be impressed by serigraphy or anodic oxidation.

[0035] Another embodiment of the tag may entail the use of a heat-resisting plastic material (or of a metal other than the aforementioned aluminium), due to the high temperatures the brushes may reach in use.

## Claims

1. Method for the manufacture of brushes, comprising an assembly phase during which a brush body, composed of one or more elements (3, 4) and a filament-holder loop (5), or a similar element for supporting fibres, are subjected to the action of presser means (8) in order to define a mechanical constraint between the brush body and the filament-holder loop (5) or similar element;  
*said assembly phase including the following steps:*

*placing on a support element (7) a blocking element (6) having an end (60) and an inner plane surface (61);*

*placing a tag (2) on the blocking element (6) in contact with said inner plane surface (61), said tag (2) bearing a series of indelible data, identifying the brush and/or the operating procedures for the brush itself;*  
*placing said brush body on the tag (2); and*

*rimming the end (60) of the blocking element (6) by means of said presser means (8) for obtaining said mechanical constraint, so that said tag (2) is fitted irremovably to said brush body.*

2. Method according to claim 1, wherein the brush body comprises at least one outer cup (3) and one inner cup (4) and said assembly operation is performed by placing on the support, element (7) stacked one on top of the other, the blocking element (6), the tag (2), said outer cup (3) a filament-bearing loop (5) or similar element and said inner cup (4) said tag (2) is interposed between said blocking element (6) and the externally of said outer cup (3).
3. Method according to claim 2, wherein said blocking element comprises a junction, (6) or a similar means for associating with means for powering said brush, junction (6) being rimmed internally to the inner cup of the brush and wherein said tag (2) is interposed between said junction (6) and said outer cup (3).
4. Method according to one of the previous claims, wherein the tag (2) is laminar and has an annular shape.
5. Method according to one of the previous claims, wherein tag is an aluminium tag (2).
6. Method according to one of the previous claims, wherein the tag is an aluminium tag (2) on which said series of data is impressed by serigraphy.
7. Method according to one of the claims 1 through 5, wherein the tag is an aluminium tag (2) on which said series of data is impressed by anodic oxidation.
8. Method according to one of the claims 1 through 4, wherein the tag (2) is made of heat-resisting plastic material.
9. Method according to one of the previous claims, wherein said data indelibly impressed on said tag (2) reproduce at least one bar code (28) obtained with colours which can be recognised by electronic reading devices.
10. Brush comprising.

a brush body including one or more elements (3;4);  
a filament-holder loop (5) or a similar fibre supporting element mechanically constrained to said brush body;  
a blocking element (6) having an inner plane

surface (61) and a rimmed end (60) for defining the mechanical constraint between the brush body and the filament-holder loop (5) **characterised in that** a tag (2) bearing a series of indelible data identifying the brush and/or the operating procedures for the brush itself is fitted irremovably between the inner plane surface (61) of the blocking element (6) and the brush body.

11. Brush according to claim 10, wherein said brush body comprises at least one outer cup (3) and one inner cup (4) between which is held said filament-holder loop (5) or similar and wherein said blocking element comprises a junction (6) rimmed in its inner end to the inner cup (4) of the brush **characterised in that** said tag (2) is placed between said junction (6) and said outer cup (3).
12. Brush according to one of the claims 10 or 11, **characterised in that** said tag (2) is laminar and annular shaped.
13. Brush according to one of the claims 10 through 12, **characterised in that** said tag (2) is made of aluminium.
14. Brush according to one of the claims 10 through 13, **characterised in that** said tag (2) is made of aluminium and said series of data is impressed thereon by serigraphy.
15. Brush according to one of the claims 10 through 13, **characterised in that** said tag (2) is made of aluminium and said series of data is impressed thereon by anodic oxidation.
16. Brush according to one of the claims 10 through 12, **characterised in that** said tag (2) is made of heat-resisting plastic material.
17. Brush according to one of the claims 10 through 16, **characterised in that** said data indelibly impressed on said tag (2) reproduce at least one bar code (28) obtained with colours which can be recognised by electronic reading devices.

#### Patentansprüche

1. Verfahren zur Herstellung von Bürsten, enthaltend eine Montagephase, während welcher ein Bürstenkörper, bestehend aus einem oder mehreren Elementen (3, 4) und ein Faserhalterring (5) oder ein ähnliches Element zum Tragen der Fasern der Wirkung eines Pressmittels (8) unterzogen werden, um eine mechanische Verbindung zwischen dem Bürstenkörper und dem Faserhalterring (5) oder ähnli-

chem Element herzustellen, wobei die Montagephase die folgenden Schritte enthält:

- Anordnen, auf einem Trägerelement (7), eines Blockierelementes (6), das ein Ende (60) und eine innere ebene Oberfläche (61) aufweist;
  - Anordnen eines Schildchens (2) an dem Blockierelement (6) im Kontakt mit der genannten inneren ebenen Oberfläche (61), wobei das genannte Schildchen (2) eine Serie von unlöschbaren Daten trägt, welche die Bürste und/oder die Benutzungsweisen der Bürste selbst identifizieren;
  - Anordnen des genannten Bürstenkörpers auf dem Schildchen (2); und
  - Bördeln des Endes (60) des Blockierelementes (6) mit Hilfe des genannten Pressmittels (8) zum Erhalten der genannten mechanischen Verbindung, so dass das genannte Schildchen (2) unlösbar an dem genannten Bürstenkörper befestigt ist.
2. Verfahren nach Patentanspruch 1, bei welchem der Bürstenkörper wenigstens eine äussere Schale (3) und eine innere Schale (4) enthält, und der genannte Montagevorgang ausgeführt wird durch Anordnen auf dem Trägerelement (7) übereinander des Blockierelementes (6), des Schildchens (2), der genannten äusseren Schale (3), eines Faserhalteringes (5) oder eines ähnlichen Elementes und der genannten inneren Schale (4), und bei welchem das genannte Schildchen (2) zwischen dem genannten Blockierelement (6) und der Aussenfläche der genannten äusseren Schale (3) eingesetzt ist.
  3. Verfahren nach Patentanspruch 2, bei welchem das genannte Blockierelement aus einem Verbindungsstück (6) oder einem ähnlichen Mittel zum Anschliessen an Antriebsmittel für die genannte Bürste besteht, wobei das Verbindungsstück (6) innerhalb der inneren Schale der Bürste gebördelt ist, und bei welchem das genannte Schildchen (2) zwischen dem genannten Verbindungsstück (6) und der genannten äusseren Schale (3) angeordnet ist.
  4. Verfahren nach einem der vorstehenden Patentansprüche, bei welchem das Schildchen (2) aus einer Lamelle besteht und ringförmig ausgebildet ist.
  5. Verfahren nach einem der vorstehenden Patentansprüche, bei welchem das Schildchen ein Aluminiumschildchen (2) ist.
  6. Verfahren nach einem der vorstehenden Patentansprüche, bei welchem das Schildchen ein Aluminiumschildchen (2) ist, auf welchem die genannte Serie von Daten serigraphisch eingeprägt ist.

7. Verfahren nach einem der Patentansprüche von 1 bis 5, bei welchem das Schildchen ein Aluminiumschildchen (2) ist, auf welchem die genannte Serie von Daten durch anodische Oxidation eingeprägt ist.

8. Verfahren nach einem der Patentansprüche von 1 bis 4, bei welchem das Schildchen (2) aus einem hitzebeständigen Kunststoffmaterial hergestellt ist.

9. Verfahren nach einem der vorstehenden Patentansprüche, bei welchem die in das genannte Schildchen (2) eingeprägten genannten unlöschbaren Daten wenigstens einen Barrencode (28) darstellen, erhalten mit Farben, die von den elektronischen Ablesevorrichtungen erkannt werden können.

10. Bürste, enthaltend:

- einen Bürstenkörper, bestehend aus einem oder mehreren Elementen (3, 4);
- einen Faserhaltering (5) oder ein ähnliches Element zum Halten der Fasern, mechanisch verbunden mit dem genannten Bürstenkörper;
- ein Blockierelement (6) mit einer inneren ebenen Oberfläche (61) und einem gebördelten Ende (60) zum Herstellen der mechanischen Verbindung zwischen dem Bürstenkörper und dem Faserhaltering (5), **dadurch gekennzeichnet, dass** das Schildchen (2), welches eine Serie von unlöschbaren Daten zum Identifizieren der Bürste und/oder der Benutzungsweisen der Bürste selbst enthält, unlösbar zwischen der inneren ebenen Oberfläche (61) des Blockierelementes (6) und dem Bürstenkörper angebracht ist.

11. Bürste nach Patentanspruch 10, bei welcher der genannte Bürstenkörper wenigstens eine äussere Schale (3) und eine innere Schale (4) enthält, zwischen welchen der genannte Faserhaltering (5) oder ähnliches gehalten ist, und bei welchem das genannte Blockierelement aus einem Verbindungsstück (6) besteht, gebördelt an seinem innenliegenden Ende an der inneren Schale (4) der Bürste, **dadurch gekennzeichnet, dass** das genannte Schildchen (2) zwischen dem genannten Verbindungsstück (6) und der genannten äusseren Schale (3) angeordnet ist.

12. Bürste nach einem der Patentansprüche 10 oder 11, **dadurch gekennzeichnet, dass** das genannte Schildchen (2) aus einer Lamelle besteht und ringförmig ausgebildet ist.

13. Bürste nach einem der Patentansprüche von 10 bis 12, **dadurch gekennzeichnet, dass** das genannte Schildchen (2) aus Aluminium hergestellt ist.

14. Bürste nach einem der Patentansprüche von 10 bis 13, **dadurch gekennzeichnet, dass** das genannte Schildchen (2) aus Aluminium hergestellt und die genannte Serie von Daten serigraphisch eingeprägt ist. 5
15. Bürste nach einem der Patentansprüche von 10 bis 13, **dadurch gekennzeichnet, dass** das genannte Schildchen (2) aus Aluminium hergestellt und die genannte Serie von Daten durch anodische Oxidation eingeprägt ist. 10
16. Bürste nach einem der Patentansprüche von 10 bis 12, **dadurch gekennzeichnet, dass** das genannte Schildchen (2) aus einem hitzebeständigen Kunststoffmaterial hergestellt ist. 15
17. Bürste nach einem der Patentansprüche von 10 bis 16, **dadurch gekennzeichnet, dass** die genannten, unlöslich in das genannte Schildchen (2) eingeprägten Daten wenigstens einen Barrencode (28) mit Farben darstellen, welche von den elektronischen Ablesvorrichtungen erkannt werden können. 20

#### Revendications

1. Procédé de fabrication de brosses, comprenant une phase de montage durant laquelle un corps de brosse, composé d'un ou plusieurs éléments (3,4) et une boucle porte-filaments (5) ou un élément similaire pour le support de fibres, sont soumis à l'action de moyens presseurs (8) afin de définir une contrainte mécanique entre le corps de brosse et la boucle porte-filaments (5) ou l'élément similaire, ladite phase de montage comprenant les étapes suivantes : le positionnement sur un élément support (7) d'un élément de blocage (6) ayant une extrémité (60) et une surface interne plane (61) ; le positionnement d'une étiquette (2) sur l'élément de blocage (6) en contact avec ladite surface interne plane (61), ladite étiquette (2) portant une série de données indélébiles identifiant la brosse et/ou les procédures opérationnelles pour la brosse elle-même ; le positionnement dudit corps de brosse sur l'étiquette (2) ; et le sertissage de l'extrémité (60) de l'élément de blocage (6) au moyen desdits moyens presseurs (8) pour obtenir ladite contrainte mécanique, de sorte que ladite étiquette (2) est fixé de façon permanente audit corps de brosse. 25
2. Procédé selon la revendication 1, dans lequel le corps de brosse comprend au moins une coupe externe (3) et une coupe interne (4) et ladite opération de montage est effectuée en plaçant sur l'élément support (7), empilés l'un sur l'autre, l'élément de blocage (6), l'étiquette (2), ladite coupe externe (3), une boucle porte-filaments (5) ou élément similaire et ladite coupe interne (4), et dans lequel ladite étiquette (2) est intercalée entre ledit élément de blocage (6) et l'extérieur de ladite coupe externe (3). 30
3. Procédé selon la revendication 2, dans lequel ledit élément de blocage comprend un raccord (6) ou des moyens similaires d'association avec des moyens d'activation de ladite brosse, le raccord (6) étant serti à l'intérieur de la coupe interne de la brosse, et dans lequel ladite étiquette (2) est intercalée entre ledit raccord (6) et ladite coupe externe (3). 35
4. Procédé selon l'une des revendications précédentes, dans lequel l'étiquette (2) est laminaire et affecte une forme annulaire. 40
5. Procédé selon l'une des revendications précédentes, dans lequel l'étiquette est une étiquette d'aluminium (2). 45
6. Procédé selon l'une des revendications précédentes, dans lequel l'étiquette est une étiquette d'aluminium (2) sur laquelle ladite série de données est imprimée par sérigraphie. 50
7. Procédé selon l'une des revendications 1 à 5, dans lequel l'étiquette est une étiquette d'aluminium (2) sur laquelle ladite série de données est imprimée par oxydation anodique. 55
8. Procédé selon l'une des revendications 1 à 4, dans lequel l'étiquette (2) est en matière plastique thermorésistante.
9. Procédé selon l'une des revendications précédentes, dans lequel lesdites données imprimées de façon indélébile sur ladite étiquette (2) reproduisent au moins un code à barres (28) obtenu au moyen de couleurs pouvant être reconnues par des dispositifs de lecture électroniques.
10. Brosse comprenant :  
un corps de brosse comprenant un ou plusieurs éléments (3,4) ;  
une boucle porte-filaments (5) ou un élément support de fibres similaire contraint mécaniquement sur ledit corps de brosse, un élément de blocage (6) ayant une surface interne plane (61) et un rebord (60) pour définir la contrainte mécanique entre le corps de brosse et la boucle porte-filaments (5) **caractérisé en ce qu'une** étiquette (2) portant une série de données indélébiles identifiant la brosse et/ou les procédures opérationnelles pour la brosse elle-même.

me est monté de façon permanente entre la surface interne plane (61) de l'élément de blocage (6) et le corps de brosse.

11. Brosse selon la revendication 10, dans laquelle le dit corps de brosse comprend au moins une coupe externe (3) et une coupe interne (4) entre lesquelles est maintenue ladite boucle porte-filaments (5) ou similaire et dans laquelle ledit élément de blocage comprend un raccord (6) fixé au niveau de son extrémité intérieure à la coupe interne (4) de la brosse, **caractérisée en ce que ladite étiquette (2) est placée entre ledit raccord (6) et ladite coupe externe (3).**
12. Brosse selon l'une des revendications 10 ou 11, **caractérisée en ce que ladite étiquette (2) est laminaire et de forme annulaire.**
13. Brosse selon l'une des revendications 10 à 12, **caractérisée en ce que ladite étiquette (2) est en aluminium.**
14. Brosse selon l'une des revendications 10 à 13, **caractérisée en ce que ladite étiquette (2) est en aluminium et ladite série de données est imprimée sur celle-ci par sérigraphie.**
15. Brosse selon l'une des revendications 10 à 13, **caractérisée en ce que ladite étiquette (2) est en aluminium et ladite série de données est imprimée sur celle-ci par oxydation anodique.**
16. Brosse selon l'une des revendications 10 à 12, **caractérisée en ce que ladite étiquette (2) est en matière plastique thermorésistante.**
17. Brosse selon l'une des revendications 10 à 16, **caractérisée en ce que lesdites données imprimées de façon indélébile sur ladite étiquette (2) reproduisent au moins un code à barres (28) obtenu avec des couleurs pouvant être reconnues par des dispositifs de lecture électroniques.**

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FIG. 1

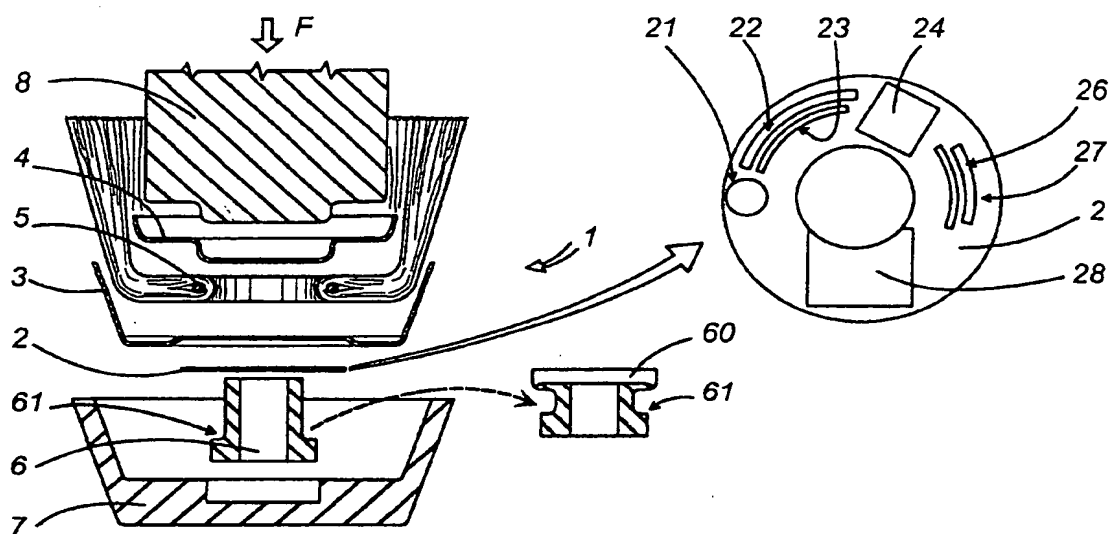


FIG. 2

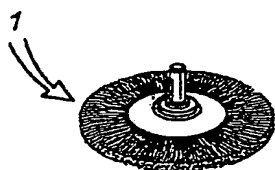


FIG. 3

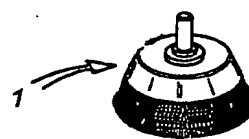


FIG. 4

